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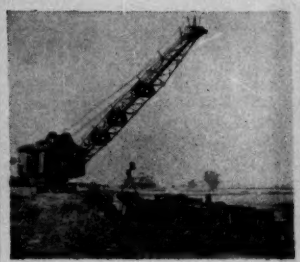

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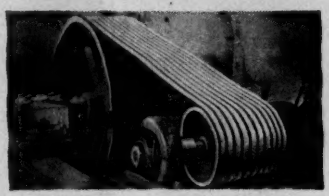

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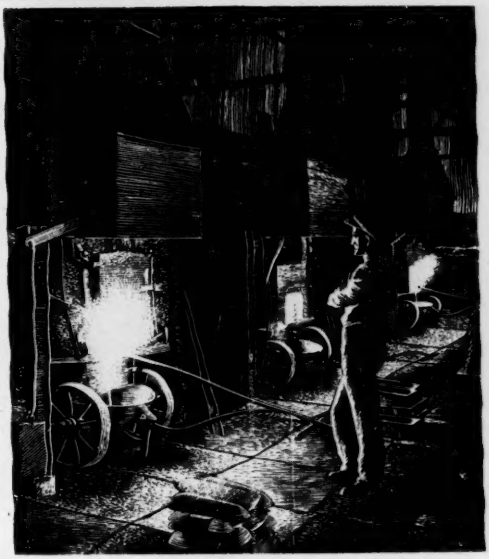

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THIS WEEK'S FEATURES

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NOTES AND COMMENTS

Mr. Havenga's Budget

The surprise produced by Mr. Havenga, South African Finance Minister, in his Budget speech last week, when he announced increased taxation on gold, diamond, and base metal mines, was out of all proportion to the additional imposts levied. Observers of the South African scene may be forgiven if they expected another "no change" budget as it is necessary to look very hard indeed for the reasons supporting the changes in mining taxation. Devaluation has extended the life of several Rand producers; receipts from the wool farmers have greatly expanded as have custom receipts, while the Union's holdings of gold and foreign exchange are approaching £170,000,000 and her gold coverage of paper money at over 77 per cent is the largest monetary backing ever achieved in the history of the Union.

The changes in mining taxation introduced by Mr. Havenga's Budget are:

(1) A return to the gold mining formula operative during 1947-1948, namely to $y = 63 - \frac{378}{x}$ from $z\ y = 60 - \frac{360}{x}$ (where y is the percentage of profit payable as tax and x is the ratio of profit to recovery) expressed as a percentage. Mr. Havenga estimates that the return to this earlier taxation formula will produce an additional £925,000 tax revenue.

(2) For base metal mining companies taxation is increased from 4s. to 5s. 6d. in the pound.

(3) For diamond mining companies taxation is increased from 4s. 6d. to 8s. But the "special contribution" of 2s. 8d. is abolished so that the net result is that the effective rate will be raised from 7s. 2d. to 8s. in the pound.

(4) For companies other than mining companies income tax is raised from 4s. to 4s. 6d. in the pound—though compensation is given in that taxation on their undistributed profits is abolished.

By returning to the 1947-48 gold mining taxation formula Mr. Havenga estimates an additional revenue of £925,000 which, spread over about forty gold producers can hardly make an appreciable dent in their current earnings and should not affect dividend distributions. This view appeared to be the market appraisal of the changes and Kaffirs, after experiencing a mild reaction immediately on receipt of the news, more than recovered later. Similar sentiment was displayed by the two chief base metal producers having a wide London market for their shares namely, Messina, the copper producer, and Consolidated Murchison which works antimony deposits. The tax increase on base metal companies from 4s. to 5s. 6d. in the pound is relatively steep but in the case of both copper and antimony the current statistical position is very sound, and on present demand assumptions neither of these companies should feel the increased incidence. However, present demand is abnormal and the inflated prices received for copper and antimony as well as for tin and manganese can hardly be maintained indefinitely. It is therefore to be hoped that the Union Government considers this new top rate as temporary and justifiable only in the special circumstances prevailing.

The exceptional prosperity enjoyed by the diamond producers during the past year appears to be the most obvious reason why taxation in this industry has been raised. For the diamond industry of South Africa has, in the past, been subject to higher rates of taxation than other industries and although the new charges can be absorbed easily, it is difficult to believe that they have been prompted by considerations of equity.

Against the wider background of the South African economy, for which capital development programme, Mr. Havenga declared, would require between £150,000,000 and £200,000,000 in the next few years, the new Budget proposals do not appear to make much sense. The essential need of the Union is to attract the funds necessary to realize this programme and it is difficult to reconcile this need with the new taxation rates which can only have the effect of discouraging the flow of funds into the Union and worse, of creating doubts in the minds of would-be investors as to what would be the nature of the tax increase if the South African economy really demanded that steps be taken to check inflationary pressure.

The Knockshinnoch Report

The report of Sir Andrew Bryan, Chief Inspector of Mines, on his enquiry into the Knockshinnoch Castle Colliery disaster on September 7, 1950 last, in which 13 men were killed and 116 were rescued after being cut off for two days, has now been published.

In his conclusions Sir Andrew Bryan stated that the disaster was due to an inrush of peat and moss into the face of No. 5 heading of the main coal seam. The presence

of this peat deposit was marked on the geological survey map of the district and although this map had been consulted in the planning department, "the symbol indicating the presence of peat . . . had been overlooked." Additional disturbing conclusions reached by the Chief Inspector were that no proper examination of the ground in the field had been made, either by the colliery management or by the local planning engineers; and, owing to a weakness in organization the planning engineers were inadequately informed of the progress of the workings in this upward heading to enable them to check the accuracy of the forecasts for that district of the mine made in the development plan in April, 1950. Moreover, he said that in his opinion, the regulation governing working under moss, which demands special precautions when working under a deposit of peat with a depth of cover of less than 60 ft., or ten times the thickness of the seam, had been contravened. He therefore recommended that before any working approaches within 600 ft. of the surface, the manager should obtain the advice of a competent field geologist as to the nature of the intervening ground, and secondly, that no working should approach within 150 ft. of the surface until the nature of the intervening ground has been determined by boring or other approved means.

These recommendations have already been accepted by the National Coal Board, while with regard to Sir Andrew's technical recommendations concerning light-weight self-contained breathing apparatus, underground telephone cables highly resistant to damage from inrush, inundation or fire, and the finding of a rapid accurate method of surveying, the Minister of Fuel and Power announced in Parliament last week that action had also been taken.

In this connection, Mr. Noel Baker in his statement to the House, said: "Research into geophysical and other methods of rapid and accurate surveying is being dealt with by the chief scientists of my department, the development of more resistant telephone cable for use underground is being discussed with the manufacturers, and research and experiments with light-weight, self-contained breathing apparatus have been going on for some months. The National Coal Board has procured a number of sets from the United States. They have been allocated to certain central rescue stations so they can be easily and quickly distributed to any part of the country where they may be required. Samples of a type of British manufacture are undergoing tests."

What stands out grimly from the report is how very close the country came to having a much greater mining disaster on its hands involving not only the 13 men actually killed, but 129 or more men. Doubtless, it is in recognition of this near miss that exemplary speed has been shown in acting upon Sir Andrew's recommendations, which if carried out thoroughly, should go a long way to ensure against the recurrence of a similar disaster.

On the administrative side, Sir Andrew's recommendations were equally to the point. His final recommendation that the status and responsibility of all planning engineers, planners and surveyors should be clearly defined in relation to those of colliery agents and managers seems particularly apposite. This recommendation can be linked to his comment in the report that although "there was evidence of a considerable measure of co-operation betwen the planning departments and the management at the colliery, there is no doubt that there was a lack of effective liaison between planning engineers and management and between planning engineers and surveyors."

It is to be hoped that the National Coal Board and the Ministry of Fuel and Power will lose no time in co-operating to implement this recommendation as expeditiously as they have the other recommendations aforementioned.

India

(From Our Own Correspondent)

Colombo, March 13.

According to a report submitted by the Atomic Energy Commission to the Government of India, valuable deposits of uranium, thorium, beryl and monazite have been discovered in various parts of India.

Experimental research on these ores and methods of their commercial utilization are being conducted in special laboratories and factories. Deposits of Indian monazite sand have been worked for a number of years and processed abroad for extraction of thorium salts and rare earth compounds.

A factory is under construction for the processing of monazite sand in India and will shortly be in production. A company, financed jointly by the Government of India and the Government of Travancore-Cochin, has been floated for the purpose and is setting up a plant at Alwaye, which will treat 1,500 tons of monazite annually. Key Indian personnel for this factory is being trained in France and, as an interim measure, Indian monazite sand is being processed by a French firm on behalf of the Indian company.

Veins of uranium-bearing ores are found in various parts of India and uranium compounds have for some time been used industrially for the manufacture of special glazes and colouring for potteries and glass. To stimulate the mining of uranium by private concerns, the Atomic Energy Commission has offered to buy all stocks of uranium ore at prices based on its uranium content. A project for setting up a factory for the production of uranium and thorium compounds is almost complete. This factory will be self-supporting and meet its operating costs through the sale of its thorium compounds to the indigenous gas-mantle industry.

Beryl is found in many parts of India. It has been discovered recently that beryllium is extremely important for its low neutron-capture and thus as a moderator in the construction of atomic pile. The question of manufacturing beryllium and its alloys is also under consideration. It is proposed to set up a pilot plant in the National Metallurgical Laboratory.

The Minister for Natural Resources and Scientific Research, Mr. Sri Prakasa, also told Parliament at New Delhi that the setting up of an atomic pile in India was receiving "the active consideration" of the Atomic Energy Commission. Regarding the import of radio isotopes, the Minister said that these could be manufactured in India only after the setting up of an atomic pile. At present, isotopes were being imported from the U.S. and the U.K. He added that a detailed examination of the two uranium bearing belts in Eastern and Central India was in progress.

COMPREHENSIVE PROGRAMME OF GEOLOGICAL INVESTIGATION

Investigations for oil and for a number of minerals including coal, iron ore, manganese ore, bauxite, gypsum, graphite, mica, gold and diamonds, are included in the programme of the present field season of the Geological Survey of India. As many as 245 special investigations in various States, apart from the work of systematic geological mapping, are to be carried out. Preliminary investigations for oil in the Jwalamukhi area and the neighbouring region in Kangra district of the Punjab, in the Gogha area of Sirobi State in Rajasthan, in Saurashtra, in the Abor Hill in Assam, and in Ramnad and Krishna districts of Madras will continue. The field programme will include investigation for gold and gypsum in the Andamans and for gypsum and salt in the Ranns of Kutch. Drilling for lignite will also be carried out in Kutch.

Oil—Cornerstone of Commerce

By W. J. HARRIS

The Third World Petroleum Congress meets in Holland between May 28 and June 6. This important occasion must inevitably underline the size and scope of the modern international oil industry, some of whose ramifications are briefly reviewed below.

None who study economics may need reminding of the supreme importance to world commerce generally of oil. In 1949, for example, no less than 143,000,000 tonnes of oil and oil products entered into international trade—the largest single item in this traffic. The story behind the product, so far as petroleum derivatives are concerned, is amongst the most fascinating tales that modern enterprise can present.

The bare statistics behind the oil industry are themselves perhaps unparalleled in other spheres. In the U.S.A. alone, the industry now has the dollar equivalent of £11,000,000 invested in plant, property and equipment, and gives employment to close on 2,000,000 personnel. In 1947, a leading U.S. oil authority estimated that between then and 1952, the international oil industry as a whole, chiefly represented by U.S., British and British-Dutch interests, would be spending approximately £3,250,000,000 on post-war expansion and rehabilitation schemes. A recent estimate of the entire industry's annual expenditure on production equipment put this outlay at almost £1,000,000,000. Such sums, contrasted with comparable capital requirements of other contemporary enterprises, may seem almost frightening in their magnitude. Yet expenditure on this scale is essential for the efficient development of the world's oil resources, and for the fulfilment of a demand which has grown steadily through the years as international industry expands.

There have been numerous important accomplishments in all spheres of the oil industry's ramifications as post-war plans have materialized. In the U.S.A., for instance, more than 20,000 new wells were completed during the period Jan./June, 1950, a record for the first six months of any year, and over 1,000 more than in the corresponding period of 1949. Total U.S. completions for 1950, although not finally tabulated at the time of writing, were thought to have tallied 43,000. This compares with the previous 39,038 in 1949. In Canada, where current expenditure on exploration work alone is now running at the rate of over $100,000,000 annually, similar vigorous activity has been recorded. As an instance, the number of producing wells in Alberta at the end of 1949 was 1,242, of which 511 had been completed during that year. At the beginning of October, 1950, the number of producing wells had risen to 1,794, which meant more successful wells have been completed during the first eight months of 1950 than in the whole of 1949.

INCREASING CANADA'S OUTPUT

Canada provides a typical example of the energy with which the oil industry habitually tackles the task of developing fresh oil resources. It is only four years—the actual month being February, 1947—since Canada's first major oilfield, the famous Leduc field, was discovered. Until then, her annual production from all sources was running at only a little over 1,000,000 tonnes. To-day, annual production has been brought to close on 4,000,000 tonnes and this figure is expected to be doubled again within the next few years. This development has meant, of course, the accompanying provision of the various ancillary facilities necessary in connection with the production and refining of crude oil. In this instance, it is worthy of note that the 1,100-mile pipeline planned to link the Albertan oilfields with a tanker terminal at Lake Superior, Wisconsin, U.S., has already been completed—within two years of the project's conception—and should be in full operation by mid-1951. It is also interesting to note that, in conjunction with this pipeline, the world's two largest freshwater oil tankers have been built for service on Lake Superior and will be ready for use as soon as the new terminal goes into action.

One last factor of importance as far as Canadian oil output is concerned should be remembered: its value as a source of public revenue. The Albertan public debt has, within the past 18 months, been reduced by over $50,000,000 as a direct result of oil revenue, and Premier Manning has been reported as saying that, at the close of the financial year for 1950, he expected the Albertan Treasury to possess an accumulated surplus of $65,000,000 through current oil developments.

OUTSTANDING DEVELOPMENTS IN VENEZUELA

In Latin America, Venezuela—the world's largest oil exporter and second largest producer—has also seen some outstanding recent developments. Before reviewing the more important, it is necessary to sketch in the background against which they have been accomplished. Those familiar with Venezuela's topography and general lack of amenities that constructional engineers in the most remote areas of many countries can take for granted, will appreciate just what has been entailed in opening up the oil resources of her swamps and jungles. Indeed, when some years ago a survey party was assigned to report on the geological characteristics of the Oficina region of eastern Venezuela—an area only some 100 miles inland from the Caribbean coast—the party had, nevertheless, to begin their approach from a base in Brazil, so formidable were the jungles and mountains barring the direct approach from the coast. It is no exaggeration to say that in Venezuela, the oil industry was faced with some of the most inhospitable terrain which ever confronted the pioneer. How this obstacle has been overcome is aptly illustrated by the following single example—typical not only of what has been achieved in Venezuela, but in many other oil-producing regions of the world.

The case in point was the completion in 1949 of the new refinery at Punta Cardon, on the Paraguana Peninsula of Western Venezuela. In 1945, when work on the project started, the site was a virgin wilderness, infested with cactus plant. The oil industry has now transformed what was sheer desolation into an ultra-modern town. Where the cactus once grew, stand model houses, shops, laundries, churches, schools, a fire station and a hospital. A theatre, a club and other recreational amenities have been provided. All the usual public utilities of an average modern European community have been installed. Water has been brought by pipline from a mountain spring, some 70 miles distant. Nine water wells have also been drilled as a precaution against any emergency. Thus, the erection of this $150,000,000 refinery—to which further extensions are being added at a cost of an additional $30,000,000—has brought into being a happy community of 10,000 people, whose every creature comfort has been anticipated. Few enterprises are called upon to carry out ancillary work of such a nature when installing a new plant.

Similar development in Venezuela has occurred at Puerto La Cruz, where two other new refineries came into operation within a few months of each other in 1950. Since the growth of Puerto La Cruz, during the last ten years, as one of the leading oil ports of the western hemisphere, the population has risen from 5,000 to 35,000 and the town has been transformed from a small, almost unknown,

coastal port into a large and thriving city. New streets and housing estates are continually being added, new businesses founded, new families moving in: all born on the wave of prosperity with which Puerto La Cruz has been bathed as a result of the ever-rising volume of oil flowing in from the Eastern Venezuelan oilfields.

Venezuelan oil output as a whole—estimated at 78,000,000 tonnes in 1950 as against 69,000,000 tonnes in 1949—has brought that country many and varied benefits. Venezuela, indeed, now derives more than 70 per cent of her entire internal income from royalties and taxes in oil, and—thanks to her oil export trade—is one of the few countries in the world to have no national debt. The oil industry, moreover, has been instrumental in making possible the agricultural development of large tracts of formerly inaccessible country as the result of the new roads the oil companies have been obliged to build in order to reach the oilfields. Farmers and planters have been quick to see in these roads a miraculous means of marketing crops and other produce, and extensive cultivation is now taking place in the vicinity of many of the oilfields.

ACHIEVEMENTS IN THE MIDDLE EAST

The same tale of persistent progress has been reflected in the oilfields of the Middle East. Here, the oil industry has accomplished some of its most impressive post-war achievements, foremost among which must rank the construction of the 1,067-mile Trans-Arabian pipeline system to link the wells of Saudi Arabia with a terminal on the Mediterranean. Completed in December, 1950, this £75,000,000 conduit has been described by some authorities as among the engineering marvels of the world.

The proposal to build the pipeline system in question might have been considered ambitious even if the terrain over which it was to pass favoured such a project. In fact, the route lay across undeveloped desert, mountain and scrub. At the site selected for the initial base camp—an uninhabited cove known as Ras El Misha'ab, on the Persian Gulf—the very water necessary for immediate use had to be first fetched by lorries from wells 40 miles away. A nearby bed of limestone had to be quarried to obtain rock with which to build a jetty. But the project went ahead with the drive and precision of a military operation. From the U.S.A., half-way across the world, came the 300,000 tons of steel, the 30,000 various types of spare parts and the 7,000 different items of equipment the operation demanded. The pipe itself was made in 31-ft. lengths, half of which were 30 in. in diameter and half 31 in. The smaller diameter lengths were shipped packed inside the larger so as to economize in cargo space. Immediately the pipe was unloaded, it was welded into 93-ft. sections at the base dump and then hauled to the hinterland by monster 50-ton tractor-trailers. Roads were carved across sand and rock by squads of the most powerful road-making machines obtainable. Pipeline-laying crews were housed in well-equipped mobile camps, fitted with such refinements as laundries, refrigeration plants, and even with portable cinemas. Six giant pumping stations were built at 180-mile intervals along the route, each station costing well over £1,000,000 and embodying swimming pools, modern houses and recreational and medical facilities. And while this prodigious construction was going forward, other crews were hard at work building the extensive tank storage farm and tanker docks at the Mediterranean terminal, near the ancient port of Sidon. So the project took shape; with doctors, dentists, mechanics, welders, electricians, clerks, marine architects, cinema operators—to name only a few of the diverse specialists employed—all working as a united team and making history in sand.

While space will not permit of further individual details, accompanying developments in Saudi Arabia, Persia, Iraq, Kuwait and other Middle East oil-producing countries, led to this area's total production during 1950 being raised to an estimated 87,000,000 tonnes as against 70,000,000 tonnes in 1949. Compared with the equivalent figure for 1938—16,000,000 tonnes—this feat is truly astonishing. Yet it does not in the slightest degree indicate that the potential maximum output of the Middle East has been approached. On the contrary, this development has been planned on the most scientific and systematic lines possible, designed to make the utmost of the underground gas pressure in the oilfields.

Next, one must consider another aspect of this increase in oil production—an increase which has been accomplished on a global scale and which, with an estimated world production of some 520,000,000 tonnes for 1950, will have meant that the 500,000,000 tonnes mark has been surpassed for the first time. One immediate result—and a factor of especial benefit to Britain—has been the extensive orders placed by the oil industry for additional tanker tonnage. By the end of June, 1950, tanker orders taken by British shipyards, but not then laid down, accounted for 70 per cent of all orders for merchant tonnage. In December last, the chairman of one leading oil company intimated that his company would soon be placing orders for a number of 32,000 d.w. ton tankers to a total value of over £20,000,000. Other oil companies have been placing similar orders, as for instance, the £2,500,000 order placed toward the close of 1950 with a British yard for two 26,500 d.w. ton tankers. Commissions of this nature are formidable even judged by modern industrial standards of spending. And such orders have become almost commonplace in Britain's shipyards. They help explain, too, why at December, 1950, the world's tanker fleet represented over 20 per cent of the world's total merchant tonnage in service.

OIL INDUSTRY'S SOCIAL WORK

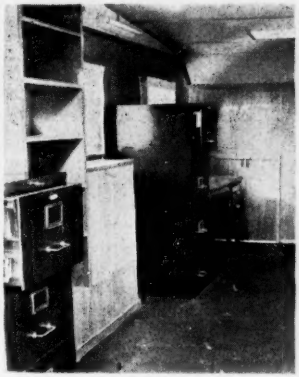
Turning from the immediate essentials to oil's production and refining, another extremely important sphere of the oil industry's activities—although perhaps not so generally appreciated—deserves to be reviewed. This is the progressive social service work which has been expanded vigorously as the industry's operational commitments have grown. In Latin America, in the Middle East, in British Borneo and Indonesia, the oil companies are constantly extending their all-important medical and health schemes. Existing hospitals have been enlarged and new hospitals established. Following its traditional policy of cultivating to the full the potential supply of skilled employees available locally, the industry has continued to provide elementary, secondary and advanced technical schools and colleges in countries where these amenities have, until recently, been lacking. Outstanding students have been sent by the industry to attend European or U.S. universities, and local governments encouraged to institute similar educational schemes out of revenues derived from oil royalties.

This side of the oil industry's ramifications, because it is carried out unobtrusively and with no wish to parade such work as an ostentatious achievement, often escapes the notice it merits. Countries most dependent upon oil products, the great manufacturing nations of the world, have become accustomed to take the benefits of modern civilization for granted. Their chief appreciation of the oil industry stems from the fact that its products are efficient, economical and available in the right place and quantity at the right time. But that is only part of the story, and it is important to set the picure in its true perspective, to show that the vital task of oil production is much more than a question of solving the purely technical problems involved. It is a question of human beings, human aspirations, needs and problems. And it is this side of the story that the oil industry studies with especial care. It is hoped that sufficient has been said to do justice to what has been achieved.

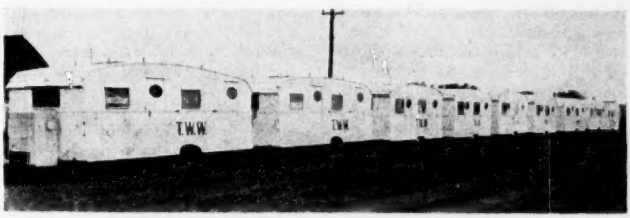
Caravans in the Mining Industry

The claim of the trailer caravan for employment in the mining industry is based on the following three factors: (1) The appearance on the market of a number of extremely robust caravans able to withstand the most rigorous conditions; (2) The skill of designers in adapting the interiors to meet varying requirements; (3) The economies which trailer caravans achieve by reducing labour costs. Acknowledgement is made to the Berkeley Coachwork Co., Ltd., for some of the material contained in this article and to the *Caravan and Trailer Trades Journal* for their kind permission to reproduce the two illustrations which appear on this page.

In view of the many technical and semi-technical functions for which caravans have already been adapted, it is not difficult to envisage their adoption by the mining industry. For prospectors, surveyors, advance parties, mining engineers and their staffs, they offer a number of advantages which make for more efficient and economical conduct of operations. They are self-contained units and can carry sleeping, living and working equipment, thus effecting considerable economies by reducing the large amount of native labour ordinarily required to transport such items. Special purpose caravans could, for example, be converted into assaying offices, making it possible for samples to be analysed on the spot and so avoiding the time lag which occurs between their despatch to base and the return of results on which so much depends. In a more general sense living quarters, which are capable of functioning as day-time offices clearly promote greater efficiency in the execution of the clerical work which is the inevitable accompaniment of field work—an advantage of which mining engineers will be particularly sensible. There is, too, the important factor of the increased comfort and better living conditions which caravans offer, for the advantages of living in quarters off the ground are paramount in areas where, as in many parts of Africa, constant precautions against insects have to be taken when sleeping or working at ground level, and where the dangers and discomfort of dirt and dust are formidable. Finally, should a "prospect" come to naught, these mobile headquarters can be towed to new locations without loss to the company—a happy and economic contrast to the usual practice of striking camp and leaving behind, as a total loss, the various temporary structures, huts, offices, etc., which have housed personnel during their stay on site.



"Ambassador" equipped as an office



"Ambassadors" and "Couriers" to Mecca

The Berkeley Coachwork Company, 175/177, Great Portland Street, London, W.1, the world's largest manufacturers of trailer caravans, specialize in adapting these robust mobile headquarters for mining and engineering purposes. The versatility of their units has been recognized in many different parts of the world. For example, a well-known firm of gold mining engineers in West Africa bought a Berkeley "Ambassador" caravan nine months ago on trial and its satisfactory performance has resulted in an order for two more. In this case, the Berkeley Coachwork Company had to consider in particular the nature of the terrain in that part of Africa and the "Ambasador" was given an additional six-inch axle clearance.

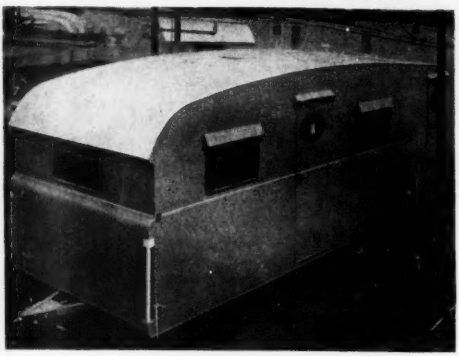
Another order which the company fulfilled was for 12 "Ambassador" and "Courier" caravans supplied to the specification of Messrs. Thomas W. Ward & Co., who are building the £2,000,000 pilgrim's road from Jeddah to Mecca for the Saudi Arabian Government. To overcome the high temperature difficulties each van was provided with awnings to cover the whole of the caravan and with ventilators and fans driven by portable generators. The illustration below shows nine of these caravans, each fitted with its own large boxed-in air-conditioning plant situated over the drawbar, as seen in the leading "Ambassador" on the left of the illustration. Some of the caravans have been fitted out as kitchens, others as well equipped offices, and yet others as living quarters. The office and living quarters have been fitted with Pye short-wave radios and all the units have Kelvinator refrigerators.

Nor is the company experienced to deal with conversions for operations only in the tropical and sub-tropical climates, for their units are also in service in different parts of Canada where they have been found to be unaffected by the extremes of temperature. It is understood that even at outside temperatures of 50°F. below freezing point no difficulties were experienced in keeping the temperature in the main saloon up to 70°F. by the addition of a small heater.

While the constructional details of these caravans must of necessity vary according to different requirements, it may be of interest to give some selected data common to the "Ambassador" and "Courier" units. The side walls and ends are jig-built, constructed of suitable timber, reinforced where necessary with steel flitch plates. All timber is kiln dried and all joints are resin bonded. The interior skins in the de luxe models are all resin bonded plywood, which in their turn are resin bonded to the main structure forming a stressed skin construction. Roofs have been made absolutely weather-proof by means of a special constructional method. Each roof is built of five aluminium sheets, Argon Arc welded into a single sheet, 24 in. by 8 ft., and the overlapping side edges are folded over the side walls and panels and screwed

down. A drip moulding is fitted to carry water away beyond the side walls. The roof is also fitted with horizontal vents with adjustable fittings for locking at any desired position.

The Berkeley "Ambassador" (below), is the largest of the company's models and has an all-up weight ex works of 37 cwt.; its overall length, height and width being 24 ft. by 8ft. 6 in. by 7 ft. 6in., respectively. Water is stored in a 20-gallon tank, cooking and lighting are by gas cylinders, and heating can be obtained either by gas fire operated from the Calor gas installation, by a solid fuel stove, or alternatively, by the fitting of kerosene burning stoves or radiators. Where mains electricity is available, electric cookers and refrigerators can be installed. The chassis is constructed of 3 by 2 by ¼ angle steel, well braced and welded, manufactured by the Dixon-Bate Company, incorporating their coupling and fitted with square section, straight axle and heavy duty springs. The tyres used are 750 x 16 Michelin truck tyres, and there is also an adjustable pilot wheel at the nose for easy manhandling. Insulation is obtained by using 1 in. fibre glass blankets in all sides, ends and roof.



The Berkeley "Ambassador"

The Berkeley "Courier," which is smaller and less expensive, is of the same robust construction and embodies many of the essential features of the "Ambassador;" the outer walls and roof are of aluminium; inner walls are oak-faced. It is equipped with "Sunfoil" reflective insulator, and sleeps four. The exterior minimum dimensions are 17 ft. 3 in. by 7 ft. 2 in. by 8 ft. 6 in., and the weight is 27 cwt. Coupling has been facilitated by the provision of a screw jack mechanism in the built-in jockey wheel pillar, so that by using the wheel brace the socket can be easily jacked off or lowered on to the ball hitch. A further feature of this assembly is the retraction of the jockey wheel by a spring-loaded plunger, so that when on the move the wheel can be readily removed to provide greatly increased ground clearance where it is most needed when negotiating uneven ground. A towing speed of over 40 miles per hour with a Standard "Vanguard" is quite normal before any tendency to "break away" becomes apparent.

Such caravans, it may well be agreed, could be used with good advantage in mining and in most forms of civil engineering and public works.

Drilling Problems in Underground Rock Breaking

By J. FRED JOHNSON, Manager of Operations, Western Mining Department,
American Smelting & Refining Co., Salt Lake City, Utah.

The perfecting of detachable drill bits by U.S. manufacturers, the adoption of Canadian practice in extensive use of the one-pass or throwaway bits, and the advent of the use of tungsten-carbide insert bits in rock drilling, have given to the mining industry the opportunity for a greater economy in underground mining than has been generally realized. The author's opinions, based on much test work, are summarized in the following article.

The new technique consists in breaking rock with holes of smaller diameter, resulting in small savings in the minor factor of cost of drilling, but usually accompanied by large cumulative savings in greatly increased production per man-shift; reduction of 25-50 per cent in air and explosives consumption and, most important of all, a large reduction in capital and maintenance costs of the much simplified facilities and equipment required both underground and on surface.

Problems have arisen because of the need to deal with the drilling of materials of infinitely different characteristics of hardness, toughness, structure and shattering, where records show a range between 19,000 ft. of drilling with a single bit in the most favourable rock, and 120 bits necessary to drill one 5 ft. hole at the other end of the scale. In this great range of variations in rock, some types chip readily, some must be ground to great fineness, others are extremely abrasive, all of which causes different type of wear of bits and different responses to blows of the machine. To illustrate this problem, the hardest quality bits are also the most brittle and will not stand up against the hardest rocks. Thus, the apparent fallacy is arrived at that, in drilling hard rock, operators should, and usually must, use a softer bit and a smaller drilling machine. With hardness inverse to the numbering, for instance, No. 17 grade tungsten carbide bits are used for hard ground, No. 12 for soft ground and, for a simple comparison with pressure cutting, No. 8 for steel cutting tools. Unfortunately, very few rocks are suitable to pressure cutting by rotary drills.

DEVELOPMENT OF DRILL BITS

The pneumatic percussion drill has been so much improved since its inception that mine operators have been able to gradually improve results attained with it and have been satisfied with that. During all this improvement in the power of drilling machines, the drill rods and drill bits were being gradually placed under greater stresses until, finally, the standard blacksmith sharpened drill steel was subjected to strains beyond the skill of most blacksmiths to meet and pass out of the picture in favour of the screw type of mechanically tempered, detachable steel bits. Such detachable steel bits lead to problems in the screw connection, and their cost was such as to require two or three grindings or sharpenings to get sufficient footage per bit to be economical. A sequence was the development of the cheaper force-on connection, with its thinner bit stock, offering possibilities of smaller diameter bits. These smaller diameter bits made feasible the drilling of a hole of approximately 50 per cent the area, doubling the drilling speed, and doubling the depth per sharpening, as compared to the

detachable screw bit in the same machine. Under these conditions, the cheaper force-on bit was not worth re-grinding or re-sharpening, and developed into a one-use or "throwaway" bit, considerably simplifying the work of the drill steel shop. Its use became almost universal in South Africa and Canada some years ago. At about the same time, the adaptation of tungsten-carbide bits to rock drilling was being developed, particularly for hard rock, and, with integral steel, having the same advantage of small diameter of bit that made the throwaway bit successful.

Considering the effect on drilling machines and drill practice of these smaller diameter bits, the past trend among mine operators and, more particularly, among contractors, had been to use larger machines and more elaborate machine jumbos to achieve higher speed and lower costs. This had progressed to a point where the use of drill rods of large section was necessary to stand the strain of the heavier machines and, even at that, the breakage of steel rods was a factor often not taken into account. The use of heavier rods then forced the use of larger diameter bits, completing a vicious circle of enlarging equipment. With the later development of smaller diameter bits, the trend was reversed and steel of smaller cross section was used, allowing further reduction in bit diameters and requiring the use of lighter machines. The substitution of the air-leg for the more complicated and expensive jumbos was also reversing the trend in that portion of the equipment. The result is the new method of mining.

The choice of these lighter drilling machines led to many competitive tests to determine what machine to use. The large variances in the results of such tests can readily be accounted for by a consideration of what the machine does, namely, turn the drill steel a certain fixed amount for each blow of the machine. Thus, with allowances for slippage, any one machine chips off, or grinds off, a definite segment of hole with each cutting edge at each blow. It can readily be seen that the correct degree of turn corresponding to each blow of the machine; the correct strength of that blow; the correct number of blows per minute, and, of prime importance, the largest machine to do this without abnormally straining the drill rod and drill bit, must be used to achieve maximum penetration at the lowest cost. It is because that one make of machine will do this best in one type of rock, and a different make of machine best in another type of rock, that such large variations in tests and varied choices of drill machines in different mines, based on such tests, are being encountered. To sum up, there must be a correlation of section of drill steel, diameter of bit, and size of drilling machine, to achieve maximum results.

NEED TO DISCARD OLD EQUIPMENT

The problem then is how to achieve this correlation in any definite case, but, before going into this, it is necessary to mention some of the usual mistakes that are made in the concept of trials of the new method. In the first place, the tendency is to use the large equipment already on the job for drilling large diameter holes and representing large capital investments. Naturally, when small section drill rods and small diameter bits are used in these larger machines, the drill rods and bits are overstrained, failures result, and the method is condemned as worthless. If an operator is not willing, before any tests are made, to commit himself to a programme of discarding old equipment, if found to be too heavy, the author's advice is not to start the tests. The savings of the new technique should quickly pay for the discarding of old equipment which should often be discarded anyway.

Each mine has its own particular conditions and problems, but the following is submitted as general procedure.

Air pressures, especially with the use of jackhammers, should not fall below 90 lb. at the drill when running and tests are worthwhile on pressures up to 110 lb. The use of larger machines at lower air pressures is almost always bad practice and is to be discouraged. In mines with insufficient compressor or pipe line capacity, the use of jackhammers will often reduce air consumption to a point where these become sufficient.

While necessary water pressures vary greatly with hardness and types of rock, a general rule is that water pressures should be between not less than 60 lb. and the air pressure used. Great variations in water pressure should be avoided.

CONSULTATION WITH MANUFACTURERS ADVISABLE

The type of drill rod and drill bit to be tested should be carefully selected, with consultation on all details with the manufacturers. As to the relative merits of cross bits and chisel bits, there are confusing data but, in general, the cross bit seems necessary, where larger machines must be used, to cushion the heavy blows of these machines. If an operator insists on tests with the larger machines he has on hand, he should definitely make his initial tests with cross bits.

In general, a 2½ in.-2¾ in. piston diameter machine, and ⅞ in. drill rod are suitable for soft and medium ground, and a 3 in.-3½ in. piston diameter machine and 1 in. drill rod for hard ground. Most drilling machines now have rifle bars of varied pitch, and tests with the different rotational speeds is advised. Tests have been carried out in which downstroke rotation increases the drilling speed and ease of drill operation, but this is due to softening of blow and might better be accomplished by using a slightly smaller machine.

While the object of the new method is to drill the smallest diameter holes that will suitably break out and shatter the rock, some ground offers difficulties to drilling and loading small 1¼ in. diameter holes, and 1⅜ in. holes might, therefore, be preferable. The author recommends to start tests with the smallest diameter holes and switch to larger diameters only if necessary. The skill of the miner often determines what is practical in this regard.

When tests have been completed, and before a decision is made by the management as between two drill set-ups, it is well to leave both in the heading and note which the miner, preferably a contract miner, uses to accomplish his work. After all, the work has to be done by the miner and, if the new method has not resulted in the accomplishment of this work at a saving of labour, the new method will not be a success in that particular job. With the lighter machine and set-up possible with the new method, it is often possible for one man on a machine to accomplish what two men on a large machine did before. While the usual opposition to any innovation may be expected from miners, they are quick to appreciate the labour saving involved, and they will then fight to retain what they originally fought against.

CONCLUSIONS

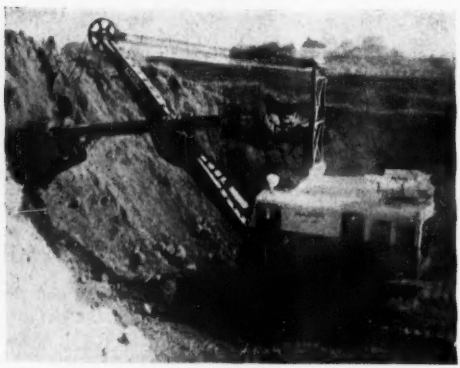
The author concludes by saying that he has visited mines where variations in use and adaptations of this new technique in mining have been worked out; these cover all types and sizes of operations, from the prospector who is working a property out in the desert wilds to large established mines. The complexities and apparent contradictions met with have taught him not to discredit any new ideas. For anyone embarking on an investigation of the possibilities at his own particular property, he urges a visit to properties where the technique has been established, to get the knowledge and the inspiration necessary for adaptation to his own particular drilling problem.

Machinery & Equipment

British-built Marions to be Available in 18 months

Considerable interest has been evoked by the announcement, published on p.107 of the February 2, 1951, issue of the *Mining Journal*, that a licence has been granted recently to John Blackwood Hodge & Co., Ltd., by the Marion Power Shovel Co., of Marion, Ohio—manufacturers of some of the largest excavators ever built—under which the British firm will have the sole manufacturing rights in Britain for the most popular sizes of machines built by the Marion Co.

While a full range of Marion models will eventually be manufactured in Great Britain, production is to start immediately with the Marion 111-M 3½-4 cu. yd. model, illustrated below. Furthermore, the 93-M 2½ cu. yd. model will also go into production immediately. Delivery of both models is expected in about 18 months' time.



A Marion 111-M 3½ cu. yd.-excavator at work

The manufacture of Marion excavators in Britain is a most important step, which will be welcomed by contractors and all users throughout this country and the sterling area, for it will now become possible to buy a full range of excavators, draglines and cranes for sterling.

The Blackwood Hodge organization will be responsible for the distribution and servicing of Marions in Britain, India and in many countries in Europe, Africa and Asia.

Consolidated Pneumatic-32 Rock Drill and Feedleg

In view of the great interest which at present is being devoted to the technique of drilling with lighter equipment, readers will be interested in the improved Consolidated pneumatic-32 rock drill and feedleg just introduced by the Consolidated Pneumatic Tool Co. Ltd., 32, Dawes Road, London, S.W.6. The success of this technique is achieved by the combination of a support leg, light drill and special steels, and as a result of the elimination of teething troubles in the equipment, it has become possible to set new standards of performance and it has already been taken up by many important contractors and civil engineering organizations for new projects.

It may be recalled that the use of light rock drills with a pneumatic leg as a support feed is a drilling method which originated on the Continent. Although employed in Great Britain for many years, it never received the serious attention of tunnel contractors until comparatively recent times. This re-awakened interest is closely tied up with the introduction of the tungsten carbide drilling bit. It was found that while tungsten carbide tipping provided the hardness and long life needed for the hardest of rock, its use with the heavy drifter type machines was restricted because they tended to fracture the tungsten carbide tipping. To secure the advantage of tungsten carbide bits, therefore, it was necessary to employ lighter types of rock drills, and, as a result, hand-held machines were brought into use. The logical development from this, of course, is the employment of a pneumatic support leg, thus leading to the ideal combination-light rock drill, support leg and tungsten carbide drill steel.

One of the main advantages of this new method is the cutting of time losses in the setting up and dismantling of heavy equipment. Secondly, it provides complete freedom of action for taking up drilling positions which the rigid types of mounting made rather restricted and cumbrous. Thirdly, the initial cost of equipment is considerably reduced, the maintenance is very low and the air consumption is less than half of that of a heavy machine.

Foremost amongst the many improvements claimed to have been incorporated in the company's feedleg is the increased size of the piston rod. This is stated to overcome all tendency to "whip," which was a common trouble, and, furthermore, it prevents breakages apt to occur at the point where the piston is attached to the drill bracket. Increased piston size also imparts considerably greater rigidity at all drilling positions. Another advance in design is the simplified twist-grip throttle, which has only one moving part—a factor of some importance from the maintenance point of view. But perhaps the outstanding feature of this new throttle is its exceptionally fine control. It is fully double acting, and the slightest twist produces an instantaneous response in the extension or retraction of the piston rod.

A further important point is the mounting bracket, designed and located to counteract the reactionary force set up by the hammer blows of the drill.

The Consolidated Pneumatic-32 Rock Drill and Feedleg

Other refinements incorporated in the Feedleg are: a "tell-tale" port in the cylinder to give the operator positive indication that the piston rod has reached the end of its travel; a wide sprag to improve stability and provide a good check for the backward thrust at all drilling angles; a bayonet fitting for speedy mounting of the drill and a hardened steel sleeve; the latter can be replaced instead of replacing the whole piston when wear takes place in the male end of the bayonet fitting.

The Feedleg has a 4 ft. stroke; it weighs 47 lb. and has an overall length varying from 5 ft. 10 in. closed to 10 ft. 1 in. extended.

Metals, Minerals and Alloys

There appears to have been little suspension in the proceedings of the International Materials Conference in Washington during Easter week. It is reported, moreover, that the United States, Great Britain and France are agreed to make the world materials group on production allocation and pricing of vital war materials, permanent. No progress appears to have been made in the International Tin Conference though it was officially denied in Washington that the talks had broken down, with the gap between producing and consuming countries proving unbridgeable. Expectations that a domestic control materials plan could be given effect by midsummer is now regarded as optimistic, and the fourth quarter is now spoken of as the earliest practicable date. Events, it is thought, may force the administration to establish itself as the sole importer of non-ferrous metals and to subsidize the business. The U.S. Department of Commerce has announced a new trade policy, reserving to itself the right to limit exports to "normal requirements" of all importing countries.

The U.S. Munitions Board Stockpile Report to Congress covering the second part of last year does not encourage the hope that the rate of stockpiling will be diminished; in fact, the general objective has been more than doubled in recent months. This seems to be due in part to more liberal appropriations of money for the purpose, and also reflects additions to the "active" list. The stockpile objective at the end of the year was placed at $8,870,000,000, of which only some 30 per cent had been acquired.

Copper.—The tightness of copper is unrelieved. In the U.S. it is reported that up to 32c. per lb. was paid last week for No. 1 wire scrap. All supplies to consumers of metal are now allocated with deliveries up to Easter totalling 104,000 s.tons with 44,000 already apportioned for April. Previous to Congress rising for the Easter recess the House Ways and Means Committee approved a Bill to suspend the 2c. copper import duty to February 15, 1953, so long as the domestic price does not go below 24c.; further consideration of the Bill will be resumed next month. Suspension of the duty has been urged by Utah Mining Association, the Nevada Mine Operators' Association and the I.U.M.M.S. U.K. imports in February were 22,939 tons (electro 13,938 tons and blister 9,001 tons); of the total, N. Rhodesia supplied 10,501 tons, U.S. 5,331 tons and Canada 4,117 tons. These figures compare with 32,088 tons in January.

Lead.—Allocations of supplies by United States' producers are reported to have been completed as far as the end of April, but demand is far from satisfied, especially from storage battery manufacturers. One leading seller has notified customers that they will obtain supplies only every other month. However, the N.P.A. is not expected to impose any end-use restrictions at present. Offerings of Mexican lead are very scarce with prices as high as 20½c.

U.K. imports in February were down to 6,644 tons compared with 10,733 tons in January, with Australia supplying the great bulk of the imports.

Tin.—No progress was made over last week-end in the international tin talks in Washington and the conference is considered to have broken down, chiefly on the price issue. The United States ceiling price of 134c. continues. Thursday's closing prices for the Straits and London are given below. World production, as is often the case at the beginning of the year, is on the low side, Indonesia recording 2,201 tons in February, making 4,536 tons in the first two months; the Congo 482 tons, and 1,562 tons for the two months; Malaya 4,004 tons, and 8,979 tons for the two months; while Bolivian exports in January were 2,232 tons. As was expected, the Penang dockers' strike proved of short duration, as the men returned to work on March 22.

U.K. imports of metal in February were 383 tons (380 tons in January) and of concentrates 3,259 tons (2,946 tons in January), of which Bolivia supplied 1,780 tons and Nigeria 1,268 tons.

Zinc.—Despite the upward tendency in zinc production in the United States, supplies remain very tight. In the grey market fairly large quantities are said to be available on the basis of 48c. per lb. for special high grade. The N.P.A. does not expect to impose any restrictions on end-use production in the near future.

The U.K. imports in February were 4,954 tons, including 2,000 tons from Canada, 1,300 tons from Australia and 1,000 tons from Norway. These figures compare with 11,235 tons in January. Imports of concentrates were nominal at 576 tons compared with 11,117 tons in January, probably reflecting the effect of the transport strikes in Australia.

Aluminium.—The United States has found it necessary to increase the amount of aluminium which producers must reserve for Defence Orders and this may now be up to 75 per cent of the forgings and pressings of the average output for the first eight months of last year. The domestic production of primary aluminium continues to improve and rose to 67,953 s.tons in January compared with 65,897 s.tons in December—this, without the stimulus of new production installations under construction.

Beryllium.—Southern Rhodesia became a producer of beryllium concentrates for the first time last year and with an output of 932 s.tons ran South Africa close for second place after Brazil. The output was valued at £62,525, the most important product after gold, asbestos, chrome and coal. The January output was 81.9 s.tons. South Africa in the first nine months of the year produced 928 s.tons from the Union and South West Africa. This also was a large increase on the 1949 figures.

Chrome.—The production of chromite in Southern Rhodesia was increased last year to 321,353 s.tons against 268,421 tons in 1949. The increase seems to be largely from stockpiles, as transport facilities improve. South African production for the first nine months of the year was also substantially higher at 401,047 s.tons, ranging from around 44 per cent to + 48 per cent.

Magnesium.—The Minister of Supply announces that his department will assume responsibility for the supply and distribution of all virgin metal in the U.K. from May 1. Consumers are required to supply information as to stocks as at March 31; their consumption in the first quarter; together with estimated requirements in April and May. The details to be submitted by April 10. Consumers during April can obtain their supplies, as stocks permit, from Magnesium Electron Ltd., Clifton Junction, Manchester.

Molybdenum.—Molybdenum has been placed under complete allocation in the United States from the beginning of May next. Imports of concentrates into the U.K. in February were 250 tons compared with 388 tons in January.

Quicksilver.—The U.S. domestic price for quicksilver is reported as $217-220 per flask nom. U.S. stocks at the end of last year were reported by the U.S. Bureau of Mines as 35,819 flasks. U.K. imports in February were 110,200 lb. (83,612 lb. in January).

Sulphur.—It was announced in Washington that the U.S. had granted a supplementary export quota of 30,000 tons for Marshall Plan countries, from which Great Britain will receive 19,000 tons. Plans are being discussed at the Board of Trade with two United States experts for reducing U.K. dependence on American sulphur by increased

home production. Facilities for speeding up prospective new plants are expected to be considered.

U.K. imports of sulphur in February were 29,669 tons, practically unchanged from the January figure of 29,223 tons. Pyrites imports were 14,355 tons (17,732 tons in January). The British Government has approved plans for the erection of a plant to produce 150,000 tons of sulphuric acid from anhydrite at a cost of £3,500,000-£4,000,000, which may be located on Merseyside, to come into operation in about two years' time.

Tungsten.—Business in the U.K. remains at a very low ebb. Buyers are only covering day-to-day requirements and those who have any stocks are hoping they will get better prices by holding. In fact, the market generally is watching closely to see how the cat jumps. Prices may be called around 525s.-535s. c.i.f. a unit, subject to negotiation.

It is reported from Lisbon that a new Anglo-Portuguese treaty has been signed that licences for export to the U.K. will again be granted.

The London Metal Market

(From Our Metal Exchange Correspondent)

There is virtually nothing to report in regard to the tin market which closed after the morning session on Thursday last, the 22nd instant, to re-open to quiet conditions on Tuesday, when a drop of nearly £50 per ton in the East was reflected in the price level here. On Wednesday the market was steady.

It is expected that the conference in Washington will break up without reaching agreement on either the price of tin or its allocation.

On Thursday the official close on the tin market was: Settlement Price £1,230, Cash Buyers £1,230, Sellers £1,240; Three Months' Buyers £1,155, Sellers £1,160. In the afternoon the market was slightly easy. Turnover for the day was 105 tons. Approximate turnover for the week (Thursday to Thursday inclusive) was 445 tons.

The Eastern price on Thursday morning was equivalent to £1,163 per ton c.i.f. Europe.

Iron and Steel

The end of the first quarter of the year discovers the steel industry in the grip of adverse circumstances, which have thrown into reverse gear the hitherto rising trend of production. To the last possible moment steel makers have deferred the curtailment of output, but the point has been reached when full production can not be sustained on short supplies of ore and scrap. Hence from all the main centres of steel production come reports of a curtailment of work and operations.

It is unfortunate that these measures should have become necessary at a time when the demand for steel, both for home industrial purposes and for export, is greater than ever, but there is no alternative until more liberal supplies of raw materials are available. As compared with last year's figures, there has been a decline of over 100,000 tons a month in ore imports and of about 80,000 tons a month in the receipts of foreign scrap.

Possibly the scrap shortage may prove more intractable than the restoration of ore imports. The ore problem is simply a matter of transport. When ore carriers are available, shipments can be speedily increased. But no marked improvement in the receipts of foreign scrap is anticipated and steel makers anticipate that they will have to use larger tonnages of pig iron in their furnace mixtures.

Mr. Alfred Barnes' hint of a ten per cent rise in railway rates, and a wage agreement ratified this week which concedes advances ranging from 1s. to 2s. 6d. per shift to iron and steel workers, heightens expectations of a further advance in steel prices in the near future. Such, however, is the strength of the demand that the market could probably absorb a reasonable rise without serious disturbance.

Most of the works have substantial export bookings and in fact some very big shipments are held up only for lack of cargo space. Canadians are hoping to receive record tonnages of British steel this summer and Australia is also looking to this country for increased supplies. Steel bars, wrought iron tubes and railway material figure conspicuously in the list of exports and of course the pressure for steel sheets and plates is unrelaxed.

Coal

With some of the collieries observing Good Friday as a holiday, and with very few pits working the voluntary shift on Saturday, production of coal in Great Britain last week showed a considerable decrease compared with the previous "bull" week of the year. The Minister of Fuel and Power met representatives of the National Coal Board and the full Executive of the National Union of Mineworkers on Wednesday to discuss ways to step up production during the summer months in order to build up stocks for next winter and to restore the export trade. One question to be considered is the extension of hours agreement, which came into operation in 1947 for a period of 12 months and has been renewed each year since.

MARCH 29 PRICES

COPPER

Electrolytic	£202 0 0 d/d

TIN

(See Metal Notes above for Thursday's Metal Exchange prices)

LEAD

Soft foreign, duty paid	£136 0 0 d/d
Soft empire, including secondary lead	£136 0 0 d/d
English lead	£137 10 0 d/d

ZINC

G.O.B. spelter, foreign, duty paid	£151 0 0 d/d
G.O.B. spelter, domestic	£151 0 0 d/d
Electrolytic and refined zinc	£155 0 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over	£360 per ton
Crude, 10 cwt. and over	£275 per ton

NICKEL

99.5% (home trade)	£406 per ton

OTHER METALS

Aluminium, £124 per ton.	Palladium (scrap), £8 oz.
Bismuth, 22s. 6d. lb.	Platinum, £27/£33 5s. nom.
Cadmium, 17s. 3d./18s. lb.	Rhodium, £45 oz.
Chromium, 5s. 3d. lb.	Ruthenium, £30 oz.
Cobalt, 15s. 6d. lb.	Quicksilver, £73 10s./£74 ex-warehouse.
Gold, 248s. f.oz.	Selenium, 25s. nom. per lb.
Iridium, £65 oz. nom.	Silver (bar), 78¼d. f.oz. spot and forward.
Magnesium, 1s. 6d. - 2s. lb. according to quantity.	Tellurium, 19s. lb.
Osmiridium, £35 oz. nom.	
Osmium, £70 oz. nom.	
Palladium, £8 10s. oz.	

ORES, ALLOYS, ETC.

Bismuth	40% 11s. per lb. c.i.f. 30% 9s. 6d.
Chrome Ore—	
Rhodesian Metallurgical (lumpy)	£11 per ton c.i.f.
" " (concentrates)	£11 per ton c.i.f.
" " Refractory	£10 12s. per ton c.i.f.
Baluchistan Metallurgical	£11 11s. per ton c.i.f.
Magnesite, ground calcined	£26 - £27 d/d
Magnesite, Raw	£10 - £11 d/d
Manganese, Best Indian	(Nominal)
Molybdenite (85% basis)	(Nominal)
Wolfram (65%), U.K.	525s./535s. nom. subject to negotiation
Tungsten Metal Powder (for steel manufacture)	35s. nom. per lb. (home)
Ferro-tungsten	33s. nom. per lb. (home)
Carbide, 4-cwt. lots	£30 18s. 9d. per ton
Ferro-manganese, home	£32 3s. 7d. per ton
Ferro-manganese, export	Nom.
Brass Wire	2s. 2¼d.
Brass Tubes, solid drawn	1s. 9¼d.

The Mining Markets

(By Our Stock Exchange Correspondent)

It is hardly surprising that markets were quiet last week. The Easter holiday period, the international situation and pre-budget despondency all combined to create a discouraging background for investors. Gilt-edged stocks staged a recovery from last week's low-levels. Comparatively small buying found the market short of stock and prices improved, particularly those of "irredeemable" issues, always more sensitive than dated stocks. Stock Exchange circles, however, think that the market has swallowed as much stock as it can comfortably digest for some little time.

Kaffirs were firm, being influenced by several conflicting factors. Before the Easter holidays, the price of gold on the free markets of the world had fallen to about $39 an ounce. The unexpected increase in taxation of gold, diamond and base metal mines announced by Mr. Havenga in the Union budget, caused uncertain conditions and an easier tendency. After the holidays a rally occurred. Renewed fears of inflation in France caused a rise in the price of gold on the Paris free market, and U.K. investors apparently preferred the known mild demands of Mr. Havenga, to the unknown and possibly harsh imposts of Mr. Gaitskell. West Driefontein were the star turn. The shares jumped on the announcement that the Carbon Leader was intersected in No. 1 shaft at a depth of 3,797 ft. below the collar. The exposure was complete and 16 sections sampled averaged 110.1 dwt. over a width of 11.2 in., equivalent to 1,233 in.-dwt. It will be recalled that the same reef intersected on No. 2 shaft gave a value of 1,075 in.-dwt. at 4,415 ft., and the No. 2 level drive into the property from Blyvoors averaged 781 in.-dwt. This excellent result confirms the very rich reef values extending into the Western part of the West Driefontein property.

Orange Free State issues maintained an all round improvement. St. Helena improved on the publication of the 1950 report. Steady progress has been made and developments on the Basal reef gave 67 per cent payability averaging 13 dwt. over 25 in. The reduction plant is now expected to go into operation early in the second half of 1951.

Copper shares staged a substantial recovery after their recent spell of weakness. There has been talk of a higher price for copper, in spite of the announcement of reductions in the United States copper stockpile targets. The present free market price of £300 to £350 per ton compares with the U.K. official price of £202 per ton.

Following the rally in the price of wolfram, Beralts rose after their recent fall. There was also some demand for the leading lead/zinc shares.

Several interesting developments occurred in the oil market. London & Thames Haven declared a dividend of 15 per cent. This compares with 10 per cent and a bonus of 2 per cent paid for 1949. The shares showed litle change at around 14s. 9d. Kern and Trinidad Oilfields struck oil yielding 150 bbl. a day in a well drilled under the sea off the south coast of Trinidad from a point between the Pitch Lake and the U. Boats plant at Pointfortin. The results were obtained at a depth of 3,300 ft. and should the yield continue satisfactorily, an important development in Trinidad oil production may have been achieved. Anglo-Iranian turned easier on the declaration of martial law in Southern Persia. Later rumours, however, that only 3,000 out of a total of 80,000 of the company's employees were on strike, and that some of these were drifting back to work, steadied the market. Much depends on how firmly the authorities will handle trouble makers. Strong representations have been made by the British Ambassador.

FINANCE	Price Mar. 28	+ or − on week
African & European	3⅜	
Anglo American Corpn.	8½	
Anglo-French	23/1½xd	−7½d
Anglo Transvaal Consol.	41/3	
Camp Bird	14/4½	+1½d
Central Mining (£1 shrs.)	50/-	+1/3
Consolidated Goldfields	2½	−⅜
Consol. Mines Selection	35/-	
East Rand Consols	4/-	
General Mining	6½	−⅛
H.E. Prop.	38/9	
Henderson's Transvaal	10/-	
Johnnies	3½	−⅛
Rand Mines	7⅞	−⅜
Rand Selection	40/-	−7½d
Union Corporation	11⅜	+⅛
Vereeniging Estates	3⅝	
Wits.	36/3	−1/3
West Wits.	2⅛	+⅛
RAND GOLD		
Blyvoors	54/3	+6d
Brakpan	22/-	
City Deep	3⅛	+⅛
Consol. Main Reef	2½	−⅛
Crown	5⅜	−⅛
Daggas	3½	
Dominion Reefs	2/1½	−1½d
Doornfontein	31/9	+3d
Durban Deep	4⅛	+⅛
E. Daggas	27/6	
E. Geduld .... (4/- units)	2⅛	+⅛
E. Rand Props.	4⅛	+⅛
Geduld	7⅛	−⅛
Grootvlei	43/1½	+1/1½
Libanon	18/-	+6d
Luipaards Vlei	24/6	
Marievale	22/9	
Modderfontein B	6/-	−3d
Modderfontein East	2⅜	
New Kleinfontein	35/-	+7½d
New Pioneer	20/7½	
Randfontein	21/3	−3d
Robinson Deep	18/3	
Rose Deep	42/6	
Simmer & Jack	7/9	
Springs	12/3	+1½d
Sub Nigel	3⅜	
Van Dyk	19/4½	+7½d
Venterspost	33/1½	+7½d
Vlakfontein	21/6	+3d
Vogelstruisbult	26/9	+3d
West Driefontein	6½	+⅛
W. Rand Consolidated	46/3	+7½d
Western Reefs	41/3	

O.F.S.	Price Mar. 28	+ or − on week
Alpha F.S.A.	12/9	
Blinkpoort	28/9	+7½d
Central Mining F.S.	5/7½	+4½d
Freddies	17/6	+3d
Freddies N.	11/7½	+4½d
Freddies S.	12/7½	+7½d
F.S. Geduld	4⅜	+⅛
Geoffries	17/3	+3d
Harmony	24/6	+6d
Odendaalsrus Estates	11/-	
Middle Wits.	21/3	+3d
Ofsits	2⅞xr	+⅛
President Brand	25/-	
President Steyn	18/-	+3d
St. Helena	36/10½	+1/10½
U.F.S.C. & G.	10/9	+3d
Virginia Deb.	74/-	
Virginia Ord.	14/7½	+4½d
Welkom	45/7½	+7½d
Western Holdings	3⅝	+⅛
WEST AFRICAN GOLD		
Amalgamated Banket	2/4½	
Ariston	7/7½	−1½d
Ashanti	30/-	−6d
Bibiani	12/-	
Bremang	3/9	
G.C. Main Reef	3/10½	−3d
G.C. Selection Trust	9/4½	−4½d
Konongo	2/3	
Kwahu	4/6	−3d
London & African Mng.	2/3	
Lyndhurst Deep	1/3	
Marlu	2/3	−1½d
Nanwa	1/1½	+1½d
Taquah & Abosso	8/-xd	−1½d
AUSTRALIAN GOLD		
Boulder Perseverance	3/10½	−1½d
Gold Mines of Kalgoorlie	15/9	
Great Boulder Prop.	7/-	
Great Western Consol.	1/6	
Lake View and Star	21/9	−3d
Mount Morgan	22/-	+1/-
North Kalgurli	18/9	−3d
Paringa	10½d	−1½d
Sons of Gwalia	14/6	
South Kalgurli	10/-	
Western Mining	7/-	−1½d
Wiluna	11/9	
MISCELLANEOUS GOLD		
Cam and Motor	37/6	+7½d
Champion Reef	12/4½	
Falcon Mines	11/6	+6d
Globe & Phoenix	28/6	

MISCELLANEOUS GOLD (contd)	Price Mar. 28	+ or − on week
G.F. Rhodesian	8/6	−6d
London & Rhodesian	5/3	−1½d
Motapa	3/4½	+1½d
Mysore	7/3	−3d
New Guinea	1/7½	−1½d
Nundydroog	11/3	
Ooregum	4/9	
Oroville	13/-	+3d
St. John d'El Rey	35/7½	−7½d
Zams	35/6	−9d
DIAMONDS		
Anglo American Inv.	3⅜	+⅛
Casts	37/6	+6d
Cons. Diam. of S.W.A.	3½	−⅛
De Beers Defd. Bearer	57/-	+9d
De Beers Pfd. Bearer	17½	−¼
COPPER		
Chartered	65/9	+9d
Indian Copper	4/9	
Messina	5⅛	+⅛
Nchanga	7⅞	+⅛
Rhod. Anglo-American	60/6	+3/3
Rhodesian Selection	37/3	+6d
Rhokana	21	+1½
Rio Tinto	23	+½
Roan Antelope	18/10½	−1½d
Selection Trust	45/9	−6d
Tanks	45/-	+1/3
Tharsis Sulphur Br.	53/9	+1/3
TIN (Eastern)		
Anglo-Burma	6/3	
Ayer Hitam	28/9	−3d
Bangrin	36/3	−7½d
Gopeng	14/10½	−4½d
Hongkong	13/4½	−4½d
Ipoh	33/1½	
Kamunting	11/9	−3d
Kepong Dredging	14/7½	+3d
Kinta Tin Mines	17/9	
Kramat Pulai	4/9	
Malayan Dredging	26/6	−3d
Pahang	17/3	−3d
Pengkalen	10/6	−3d
Petaling	13/-	+1½d
Rambutan	19/9	−9d
Siamese Tin	24/9	−3d
Southern Kinta	15/3	−1½d
S. Malayan	31/6	
S. Tronoh	24/8	
Sungei Kinta	19/4½	−7½d
Tekka Taiping	12/-	
Tronoh	31/9	

TIN (Nigerian and Miscellaneous)	Price Mar. 28	+ or − on week
Amalgamated Tin	12/-xd	−3d
Beralt Tin	22/6	+1/6
Bisichi	4/4½	−1½d
British Tin Inv.	16/10½	−4½d
Ex-Lands Nigeria	7/10½	
Geevor Tin	16/7½	+4½d
Gold & Base Metal	3/10½	−1½d
Jantar Nigeria	7/10½	
Jos Tin Area	11/4½	+1½d
Kaduna Prospectors	5/-xr	+9d
Kaduna Syndicate	7/6xr	−3d
London Tin	5/3	−3d
Ribon Valley	1/6	
United Tin	2/6	
SILVER, LEAD, ZINC		
Broken Hill South	55/6	+6d
Burma Corporation	4/4½	
Consol. Zinc	32/6	+1/3
Lake George	27/9	+6d
Mining Trust	5/-	
Mount Isa	37/6	−6d
New Broken Hill	29/-	
North Broken Hill	75/6	+6d
Rhodesian Broken Hill	21/-	+9d
San Francisco Mines	63/-	+1/1½
Trepca	3/7½	
MISCELLANEOUS BASE METALS & COAL		
Amal. Collieries of S.A.	3⅜	−⅛
Associated Manganese	71/6	−6d
Chinese Engineering	2/3	−3d
C.P. Manganese	54/6	−9d
Natal Navigation	5⅝	
Wankie	21/6	
Witbank Colliery	4⅜	
CANADIAN MINES		
Dome	$31	−1
Hudson Bay Mining	$110	−2
International Nickel	$73¾	+¼
Mining Corpn. of Canada	£6¼	−¼
Noranda	$150	−5
Quemont	£9¾	+¼
OIL		
Anglo-Iranian	5⅜	+⅛
Apex	46/10½	
Attock	24/4½	
Burmah	53/9	
Canadian Eagle Bearer	35/1½	+6d
Mexican Eagle	23/7½	
Shell	4⅜	+⅛
Trinidad Leasehold	25/9	
T.P.D.	30/9	+3d
Ultramar	36/9	+4½d

Company News & Views

St. Helena to Crush this Summer

The fifth report of St. Helena Gold Mines disclosed that receipts on capital account again totalled £7,187,500 plus a secured housing loan of £355,000, against £375,000 and that after taking into account all expenditure current assets less creditors amounted to £1,383,835.

During the year the No. 4 vertical shaft was sunk to its final depth of 2,938 ft. and the permanent shaft equipment installed. Development work from No. 3 shaft was again retarded by the intersection of water bearing fissures, which necessitated sealing by cementation. Of the 3,865 ft. sampled on basal reef 2,595 ft. or 67 per cent proved payable having an average assay value of 13 dwt. over a width of 25 in. No calculation of ore reserves was made, the report continues, because of the limited amount of development done. It is now considered unlikely that development will have progressed sufficiently to enable the reduction plant to be supplied by the middle of 1951 with ore on the substantial scale originally planned but the plant should be ready to go into commission early in the second half of the year in the expectation that adequate electric power will be available.

Grootvlei's Record Showing

Tonnage and profit records, with other outstanding features, give distinction to the 1950 annual report of Grootvlei Proprietary Mines—the premier member of the Union Corporation group. Construction work on the reduction plant extension was completed during the year and the ore milled reached the highest ever of 2,267,000 tons—an increase of 206,000 tons over the previous year. Yield per ton was lower at 4.57 dwt., due to the dropping of the grade but the revenue increased by 8s. 6d. to 57s. 8d. per ton. Profit per ton, which rose by 7s. to 33s. 6d. per ton, was well able to support the increase of 1s. 6d. per ton in working costs to 24s. 2d. The total working profit was the highest yet achieved by the company and amounted to £3,800,115. It compared with £2,736,729 in 1949. This enabled the dividend to be increased to 3s. per 5s. unit of stock as against 1s. 11½d. in the previous year, absorbing £1,715,822. A substantially larger amount—£1,917,028—was required for taxation but capital expenditure was only £21,963 compared with £188,726, and the unappropriated balance of £653,069 went against £520,526.

An increased amount of development was accomplished during the year; the footage being 60,535 as against 51,846 ft. Of the 42,555 ft. sampled, 23,535 ft. or 55 per cent proved payable, which was rather lower than the pay ratio of the previous year's development.

Exploration of the May Reef horizon of the Kimberley Reefs by diamond drill holes from surface continued during the year but no values were revealed. The No. 36 haulage from No. 3 shaft was completed as also a sand-filling borehole to the Main Reef horizon in the north-western part of the mine—a joint project with East Geduld.

Ore reserves which are now probably the largest of any mine of the Rand have been further built up by 1,000,000 tons to 15,000,000 tons of a value of 4.6 dwt.

East Geduld's Big Profit Increase

Although there was no expansion in the milling operations of East Geduld during 1950, the benefits of the increased price received for gold illuminated the annual report. There was a slight decrease in the quantity of ore dealt with—1,738,000 tons against 1,754,000 tons—but revenue and profit established records. A total of £6,601,982 was obtained for the company's output (including £97,578 premium gold sales) and the profit amounted to £4,505,015. Revenue per ton milled was 76s. as against 58s. 10d.—an increase of 17s. 2d. per ton which was well able to bear the rise of 3s. 8d. per ton in working costs at 24s. 2d. The upshot was an improvement of 13s. 6d. in profit per ton milled to 51s. 10d. There was a substantial increase in the amount provided for taxation—£2,330,350 against £1,611,353—and after taking into account income from investments (Grootvlei shares) of £83,586 and providing for sundry expenditure, the net profit for the year was £2,254,458 as against £1,774,356. This enabled the dividend to be increased to 4s. 7½d. against a comparable figure for the previous year (before the £1 shares were split into 4s. stock units) of 3s. 3 3/5d., absorbing £2,081,250. Capital expenditure called for a smaller amount at £112,320 and the forward balance was slightly higher, £493,380.

There was an increase in the footage driven on the Main Reef during the year; the total development being 17,496 ft., of which 10,440 ft. were sampled, the pay ratio being 65 per cent as against 58 per cent in the previous year.

No values of economic importance were found in cross-cutting in the Kimberley Reef series, to the position of the proposed sub-vertical shaft, and a start has been made on shaft sinking. This is for the purpose of expediting the extraction of ore from the Main Reef Leader in the East Central part of the property.

There is no change in the mine's ore reserves; they remain at 12,500,000 tons, the value being slightly higher at 5.7 dwt.

Geduld Proprietary's Reduced Ore Reserves

A feature of the Geduld Proprietary's operations is the dual source of the company's income, derived from both its own mining and its large shareholdings in East Geduld and Grootvlei Proprietary. Revenue from this latter channel has continued to grow and again expanded last year: a total amount of £824,896 being derived as against £583,054 in 1949. From mining operations there was a balance of £742,186 compared with £639,562 the previous year.

The annual report records a small increase of 21,500 in tonnage milled at 1,279,000, the yield being slightly lower at 3.05 but revenue per ton was increased by 3s. 7d., although much of the benefit was offset by a rise of 2s. 2d. per ton in costs to 27s., the highest so far recorded. Profit per ton milled of 11s. 7d. was, however, 1s. 5d. higher than for the previous year. The total revenue amounted to £1,589,643 compared with £1,239,975. Taxation again called for more—£317,570—and after taking into account sundry items of income and expenditure, the net profit for the year was £1,251,489 as against £968,735. This bigger profit balance, coupled with a marked decrease in capital expenditure (£32,488 against £120,536) enabled the dividend to be again stepped up and 16s. 6d. per share was paid, against 11s. 9d. It absorbed £1,205,207 and left a slightly higher unappropriated balance of £366,570.

Development on the Black Reef continued throughout the year but the pay percentage and value was lower. The total footage of work amounted in all to 16,168 ft. or 2,456 ft. more than in the previous year, and of the 11,445 ft. sampled, only 16 per cent proved payable. The previous year the pay ratio was 34 per cent. There is a disappointment in the ore reserve aggregation which at the end of 1950 was down by 600,000 tons at 4,000,000 tons, value 3.40 dwt.

Vereeniging Estates Raises its Dividend

The report and accounts of Vereeniging Estates for 1950, revealed a rise in gross revenue of £110,936 to £703,551. Expenses remained virtually unchanged at £36,061, giving a net profit for the year of £667,490 compared with £557,478. To this net figure was added £97,716 brought in and £73,669 arising from the realization of investments and other fixed assets making £838,875 avail-

able. Taxation was lower at £30,000 (£36,000), general reserve received £150,000 (nil) dividend payments aggregated 25 per cent (22½ per cent) on the £2,250,000 capital, absorbing £562,500 and the balance remaining, £96,375, was carried forward.

Vereeniging Estates although principally interested in coal through its substantial interests in Amalgamated Collieries, Coronation Collieries, and Springbok Collieries, as well as in South African Coal Estates (Witbank), its operations extend to agriculture, property management on a considerable scale, and to the building industry in which it has an important stake through its subsidiary, the Vereeniging Brick & Tile Co.

Vereeniging Brick & Tile

During 1950 Vereeniging Brick & Tile Co. experienced a steady demand for the full range of its products, and its three Works operated at maximum capacity. This information, given by Mr. T. Coulter, the chairman, in his statement accompanying the report and accounts, was a cheering contrast to his statement for the previous year, when demand for bricks, sewage pipes and fittings fell off due to the general economic recession in South Africa.

The improved demand conditions were reflected in the profit and loss account where trading profit, after providing for all working costs, was shown at £313,300 against £294,534—an increase of £18,766. Expenses, including provision for depreciation amounted to £62,259 leaving a net profit for the year of £251,041 compared with £46,744 in 1949. Taxation called for £57,000 (£52,000), the sum of £50,000 was transferred to general reserve, dividend distributions aggregated 10½d. per ordinary share, equivalent to 17½ per cent (same) and 5½ per cent (same) on the preference shares leaving the carry forward at £54,237 or £10,334 less than the balance brought forward previously.

The company's subsidiary, Vereeniging Tiles Ltd., incurred a small loss during the year of £1,247 which, in view of the small volume of sales was considered satisfactory. However, a number of large contracts were secured during the latter part of the year for fulfillment this year and better results are anticipated from now onwards.

Ariston's Excellent Results

The impressive results of Ariston Gold Mines (1929) for the year ending September 30, 1950, undoubtedly reflects the benefits of the first full year in which the higher gold price has been operative. But not all the credit for its excellent performance can be attributed to devaluation. A higher tonnage was crushed for the fourth successive year; the yield of 103,562 oz. was the highest ever recorded by the company; the grade of ore milled increased; and finally, record earnings were achieved—net profit working out at £249,542 against £149,375, an advance of no less than 66 per cent. The amount available for appropriation was swollen by the addition of a taxation write-back of £44,481, which together with the £75,515 brought in, gave a total of £369,938 compared with £269,169. Dividend payments totalled 9d. per share, against 6d., which absorbed a net amount of £185,625 (£123,750) and after writing off £108,520 including £100,000 written off development connected with the Broomassie Drive, the carry forward was slightly higher at £75,793, compared with £75,515 previously.

Although Ariston has not been able to escape rising costs, which during the year totalled 49s. 9½d. per ton milled, against 42s. 11d., all signs indicate that its satisfactory position will be maintained. For the first three months of the current year tonnage milled averaged 26,500 tons per month, an average of 2,083 tons per month higher than during the year under review, both grade of ore and recovery being well maintained. The ore reserve position calls for special comment as the total available at the company's fiscal year end (excluding 243,089 tons in shaft pillars) amounted to 2,882,255 tons, averaging 6.81 dwt. over 168 in., a supply equivalent to more than nine years on the basis of current production.

An interim dividend of 2¼d. per unit, less tax, has been declared in respect of the current year.

Company Shorts

Kepong Dredge Resumes Operations.—Kepong dredge which, as previously notified, was stopped on January 27 owing to damage to bunds caused by exceptional rains and flooding, resumed normal operations on February 26.

Loraine Gold Prospectus Published.—Loraine Gold Mines prospectus has been despatched to shareholders of Orange Free State Investment Trust who are offered one Loraine Gold share at par for every five "Ofsits" held, and to shareholders in Wit Extensions who are offered five Loraine Gold shares for every four shares held in Wit Extensions.

Union Corporation's Results.—The preliminary announcement of the results of Union Corporation for 1950 showed that after providing £550,400 in taxation, net profit amounted to £927,319 against £831,070. To this net figure was added £213,008 brought in making £1,140,327 available. The sum of £300,000 against £200,000 was placed to the credit of the exploration reserve account, dividend payments aggregated 6s. per share absorbing a net amount of £558,000, leaving a balance of £282,327 to be carried forward.

Yukon Consolidated Gold Corporation have released provisional results for 1950, which show that the company made a profit of approximately $1,074,140 ($688,906), after providing for all charges except depreciation and amortization, aggregating $260,000 ($257,381) and for income tax estimated at $85,500 (nil), resulting in a net profit for the year of $728,640, which compares with $431,525 in 1949. These figures are exclusive of the amount received by the company under the Emergency Gold Mining Assistance Act. The amount received for 1949 operations was $161,533, and the estimated amount for 1950 is $40,000.

A substantial contribution to the satisfactory results obtained during the year was made by No. 4 dredge operating on Bonanza Creek, which encountered unexpectedly high values deep in the bed rock over ground previously dredged.

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Topical News in Brief

Increased Iron Ore Production in Hong Kong.—Iron ore production in Hong Kong last year was more than double the amount mined in 1949; the Colony produced 169,374 tons in 1950, as compared with 59,181 in the previous year.

Israel to Produce Sulphur from Pyrites.—The plant of the Fertilisers & Chemicals Co. Ltd., Haifa, is to be converted at a cost of $1,000,000 to produce sulphur from iron pyrites, adopting the British method of production, states a Reuter report.

Big Diamond Find in S.W. Africa.—A 160 ct. fine diamond, estimated to be worth about £80,000 has been found in workings of the Consolidated Diamond Mines of South-West Africa at the mouth of the Orange River. It is a blue-white, wedge-shaped gem of unusual purity and quality, one and a half inches long and an inch wide. Sir Ernest Oppenheimer, chairman of the Anglo American Corporation of South Africa Ltd., said: "It is the finest diamond in colour I have ever seen."

Important Barytes Deposit Discovered in Austria.—A large deposit of barytes, containing from 60,000 to 100,000 tonnes, is reported to have been discovered in the Semmering area of Austria. The deposit, which is located along the frontier between Lower Austria and Styria (British and Russian zones), is described as one of the most important discoveries made during the last few decades. As a result, it is expected that Austria will be able to start exports on a large scale.

Argentina to Become a Gold Producer?—Surveys carried out in the zone of Agua de Dionisio, in the province of Catamarca, Argentina, have shown the existence of important goldfields. It is believed that if these fields are properly exploited, production of gold will appreciably increase the wealth of Argentina. A decree has been issued declaring the zone in question, covering 1,428 sq. kilometres, a reserved area to be surveyed, explored and exploited by the National Mining Department.

British Equipment for Portugal's Hydro-Electric Power Plan.—The inauguration of the Castelo do Bode dam on the River Zezere, about 130 kilometres north of Lisbon, has completed the first stage in a plan to harness power from Portuguese rivers and provides for a network of power stations which will eventually carry electric power to all parts of Portugal, states a Reuter report from Lisbon. The new dam is 115 metres high and 300 metres long; some 960,000 cu. metres of concrete were used in its construction, and it will produce 300,000 kW. a year. The power station has three hydro-turbine generators, each with a rating of 73,000 h.p., and high-tension lines connect the station with Lisbon and Oporto. A British firm, Paulin & Co., supplied 60,000,000 escudo's worth of contractors' machinery, including cableways and stone-crushing plant. The whole of the hydro-electric machinery, costing 120,000,000 escudos, was supplied by the English Electric Co. and Metropolitan-Vickers.

World Steel Production.—Western European steel production last year exceeded that of the Soviet Union and all its satellite countries in Eastern Europe by more than 20,000,000 tonnes. According to revised figures published by the steel section of the Economic Commission for Europe, steel production in Western Europe in 1950 amounted to 52,213,000 tonnes compared with 8,041,000 tonnes produced by the Eastern European countries (excluding Yugoslavia) and an estimated production in Soviet Russia of 24,000,000 tonnes.

U.S. steel production last year stood at 97,736,000 tonnes. The E.C.E.'s revised figures estimated that Western Europe's steel production would reach 63,230,000 tonnes by 1953, as against 10,770,000 tonnes for the Eastern satellite countries. U.S. steel production was estimated at over 100,000,000 tonnes for 1953. No forecast was given for Soviet Russia's production in 1953.

British steel production was expected to increase from 16,586,000 tonnes last year to 18,000,000 tonnes in 1953. Western German steel production, given as 12,121,000 tonnes for 1950, was forecast at 13,500,000 tonnes for 1953. France was expected to have the largest European increase, jumping from 8,680,000 tonnes in 1950 to an estimated 14,800,000 tonnes in 1953. Total European steel production (excluding the Soviet Union) was expected to reach nearly 75,000,000 tonnes by 1953.

The report added that exports of European steel to Africa, the Middle East, the Far East and Latin America might fall off in the next few years as a result of production in those areas rising faster than consumption. While there was still quite a good market in the U.S. for European steel, the report said, "this may only be of a temporary character, dependent on demand generated by the defence programme and liable to fall off as additional production capacity is brought into operation in the United States."

THE VEREENIGING ESTATES, LTD.

(Incorporated in the Union of South Africa)

INCREASED REVENUE

MR. T. COULTER'S REVIEW OF COLLIERY INTERESTS

The fifty-second Annual General Meeting of the Vereeniging Estates, Ltd., will be held at 65, President Street, Johannesburg, on April 20.

The following is an extract from a statement by the chairman, **Mr. T. Coulter,** dated March 5, 1951, circulated with the annual report and accounts for the year ended December 31, 1950:

BALANCE SHEET AND ACCOUNTS

The revenue for the year amounted to £703,551, compared with £592,615 for the year 1949. Expenses, including directors' fees, salaries and depreciation, amounted to £36,061, leaving a net profit carried to appropriation account of £667,490, which was £110,012 higher than the net profit for the previous year. Stockholders will recollect that the share capital of the company was increased during the second half of the 1949 financial year, and the year 1950 is, therefore, the first one to reflect the income on the increased capital for the whole year.

In the appropriation account there is reflected a surplus arising from the realization of investments and other fixed assets of £73,669, being the excess over book cost of compensation offered by the South African Railways for land expropriated from the company in the vicinity of Vereeniging for railway development purposes. An amount of £97,716 was brought forward on appropriation account at the beginning of the year, and after adding the net profit and surplus already referred to there was a sum of £838,875 to be dealt with. Provision for taxation absorbed £30,000, and £150,000 has been transferred to general reserve account. An interim dividend of 10 per cent was paid during August of the year under review and a final dividend for the year of 15 per cent has recently been declared, making a total distribution for the year of 25 per cent and absorbing £562,500. These appropriations absorbed £742,500 and left a balance of £96,375 on appropriation account to be carried forward to the new year.

Dividend declarations for the year under review totalling 25 per cent are 2½ per cent higher than declarations made in respect of the year 1949.

COLLIERY INTERESTS

Amalgamated Collieries of South Africa, Ltd.: The sales output of the company, including the outputs of directly operated collieries and of wholly owned subsidiaries, during the year 1950 amounted to 6,790,748 tons, being a decrease of 75,283 tons over the output for the previous year. Dividends received for the year amounted to 15 per cent which is an increase of 1½ per cent on the 1949 declarations.

The Coronation Collieries, Ltd.: The sales output for this company for the year 1950 was 1,188,902 tons of coal being a decrease of 4,479 tons over the previous year. The sales output of its subsidiary, Vryheid Coronation, Ltd., was 620,581 tons of coal and 166,552 tons of coke, as against 661,095 tons of coal and 168,240 tons of coke in the previous year. Dividends declared during the year were unchanged at 27½ per cent.

Springbok Colliery, Ltd.: The sales output for this company for the year 1950 was 901,626 tons of coal, compared with 843,169 tons in the previous year, an increase of 58,457 tons. Dividends received during the year totalled 30 per cent, which is an increase of 2½ per cent on the 1949 declaration.

South African Coal Estates (Witbank), Ltd.—The sales output of this company, in which your company has a substantial interest, for the year 1950 was 2,104,614 tons of coal compared with 2,312,515 tons in the previous year, being a decrease of 207,901 tons. Dividends declared during the year ended June 30, 1950, totalled 20 per cent, as against 17½ per cent in the previous year.

The combined sales output of all the above colliery companies and their associated companies during 1950 was 11,606,471 tons, as against 11,876,191 tons in 1949.

The coal industry, particularly in the Transvaal, continues to suffer from inadequacy of transport facilities, both inland and on the high seas. It is becoming increasingly apparent that the South African Railways Administration will be committed to heavy capital expenditure if it is to cope with the ever increasing demand for transport. As far as shipping is concerned, the arrival of vessels is irregular and it is impossible to forecast with any degree of certainty, prospects for even a few months ahead.

VEREENIGING BRICK AND TILE CO., LTD.

There was a steady demand for this company's products, building brick, refractories and salt glazed ware, throughout the year. The net profit earned was £251,041, compared with £246,744 for the previous year. Dividends declared were 5½ per cent on the Preference shares and 17½ per cent on the Ordinary shares, which were the same as those declared in 1949.

The subsidiary, Vereeniging Tiles, Ltd., commenced the manufacture and sale of concrete roofing tiles during the year, and incurred the small operating loss of £1,247 in its first year. A number of large contracts were secured for fulfilment during the current year and this subsidiary should show satisfactory results throughout 1951.

TOWNSHIPS

The township of Three Rivers Extension No. 2 was proclaimed after the end of the financial year under review. In accordance with the company's policy, any profit on provisional sales is carried forward in suspense until proclamation. The profit on these sales will, therefore, only be taken to account in the profit and loss account during 1951.

Copies of the annual report and accounts may be obtained at the London office of the company, 11, Old Jewry, E.C.2.

VEREENIGING BRICK AND TILE CO.

(Incorporated in the Union of South Africa)

LARGER TRADING PROFIT
STEADY DEMAND FOR PRODUCTS
MR. T. COULTER ON EXPANSION PLANS

The fifth Annual General Meeting of Vereeniging Brick and Tile Co., Ltd., will be held at 65, President Street, Johannesburg, on April 20.

The following is an extract from a statement by the chairman, **Mr. T. Coulter,** dated March 5, 1951, circulated with the annual report and accounts for the year ended December 31, 1950:

RESULTS FOR THE YEAR

The profit from trading, after providing for all working costs and administration charges, was £313,300, an increase of £18,766 when compared with the previous year. Directors' fees, contributions to staff pension fund, provision for depreciation, interest and donations absorbed £62,259, leaving a net profit for the year of £251,041, as against £246,744 for 1949.

Provision for taxation was £57,000 and £50,000 has been transferred to general reserve account which now stands at £150,000. Preference dividends absorbed £27,500 and Ordinary dividends 7 and 8 declared during the year and totalling £126,875 were maintained at the same level, namely 17½ per cent per annum, as the previous year. The balance on appropriation account carried forward to the current year was £54,237, £10,334 less than the balance brought forward at the beginning of the year.

OPERATIONS

The company continues to operate its three works at Vereeniging, at Houtkop near Vereeniging and at Rietfontein near Springs. In addition, raw material deposits are worked in Southern Rhodesia, in the Transvaal and in the Cape Province whence the raw materials are railed to the various works for processing. Quantities mined in excess of requirements are sold.

There has been a steady demand for the full range of the company's products throughout the year and the three works have operated at maximum capacity.

VEREENIGING TILES, LTD.

The issued capital of this subsidiary company which manufactures concrete roofing tiles, stood at £50,000 at the end of 1950, of which your company had subscribed 51 per cent—namely, £25,500.

Sales were of meagre dimensions in the first few months of production, with the result that stocks of manufactured tiles accumulated and the company became short of working capital. Your company agreed to render temporary financial assistance and at the end of the year had loaned £24,500. The capital of the company has since been increased by £10,000 and the loan account has been reduced by that amount.

The company incurred a small operating loss of £1,247 during 1950, which is regarded as satisfactory in view of the small volume of sales. A number of large contracts were secured during the latter part of the year for fulfilment during this year. With this improvement in sales it is anticipated that the company will show satisfactory results from now onwards.

EXPANSION PLANS

Arrangements have recently been concluded for the expansion of the company's activities in Southern Rhodesia. It is proposed that certain lines of refractory brick for the Northern Rhodesian and Congo markets will be manufactured in Southern Rhodesia by a new company to be domiciled there, in which your company will own a 60 per cent interest. The remaining 40 per cent of the capital will be subscribed by Consolidated Rand Brick, Pottery and Lime Co., Ltd. The administrative and technical control of this new company will be vested in your company.

FINANCE

In my statement to you covering operations for the year 1949 I referred to a finance agreement negotiated with The Vereeniging Estates, Ltd., whereby that company undertook to grant loan facilities up to a maximum amount of £250,000. Borrowings were made under that agreement during 1950 but your company was able to repay these before the end of the year. The agreement, however, is still operative and will provide a useful source of funds for expansion needs pending the determination of new capital requirements.

Copies of the annual report and accounts may be obtained at the London office of the company, 11, Old Jewry, E.C.2.

Mining Men and Matters

Mr. Robert Annan, chairman of the Consolidated Gold Fields of South Africa, has been elected president of Yukon Consolidated Gold Corporation in succession to the late Mr. Goldthorp Hay. **Mr. C. C. Colvin,** director, has been elected vice-president and **Mr. Richard S. Caverhill,** managing director of Lake View Investment Trust, has been elected to fill the vacancy on the board caused by Mr. Hay's death.

Dr. John M. Rogan has been appointed chief medical officer to the National Coal Board in succession to Dr. E. H. Cappel, resigned.

The Hon. Andrew Nicolas Armstrong Vanneck has been appointed a director of Zambesi Exploring.

Camborne School of Mines annual dinner will be held at Tonkins' Café, Camborne, on Friday, May 4, 1951, at 7.30 p.m. for 8 p.m.

Consolidated Murchison (Transvaal) Gold Fields & Development has opened a transfer office and London register of shareholders at the address of Anglo-Transvaal Trustees, Bilbao House, 36, New Broad Street, E.C.2.

Business Items

Mr. E. J. Lowe and **Mr. E. Wilson Hague** have been appointed directors of Thos. Firth & John Brown.

Major-General Sir Edward Spears has been appointed to the board of the Bank of British West Africa.

British Insulated Callender's Cables has announced that the new telegraphic address of their Helsby Works is: "Bicalbest Helsby Warrington."

Mr. Alan P. Good, Managing Director and Chief Executive of the Brush Aboe Group, which manufactures the largest number of industrial Diesel engines in the world and is responsible for more than one-third of Britain's total Diesel engine exports, has just returned from a 25,000 mile tour of the Commonwealth and the U.S.A. with orders worth about £5,000,000. In this year alone, the Group has been taking orders at the rate of almost £1,000,000 per week since the beginning of the year.

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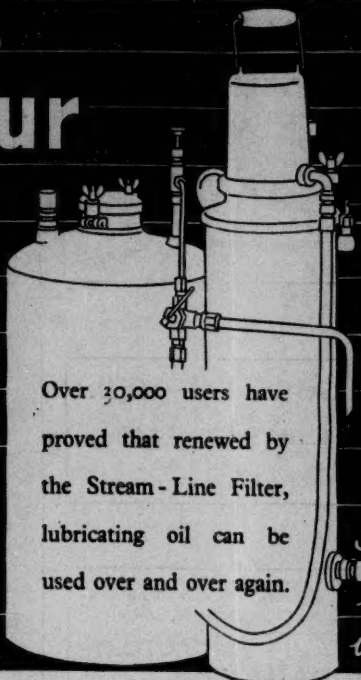

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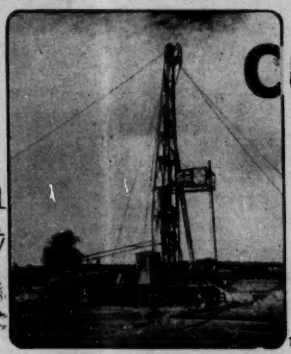

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